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Sortal Concepts and Modality

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ABSTRACT

What is the modal significance of sortal concepts? It is generally accepted that sortal concepts provide persistence conditions with modal implications that are *de re*, and not merely *de dicto*. This appears to be assumed, as common ground, by theorists who disagree about whether things have their persistence conditions essentially, and by theorists who take opposing sides in the debate about whether coincident material objects are identical. I do not think that this important assumption has received the scrutiny that it deserves. In §§1–8 I examine the contrast between a ‘pure *de dicto*’ theory of persistence conditions and a variety of *de re* theories, ranging from the essentialist *de re* theory that holds that a thing’s persistence conditions are essential to it, to a theory according to which the relevant *de re* persistence conditions merely involve counterfactuals with no essentialist implications. I note (§4) that it is a striking feature of recent debates about material coincidence that both pluralists and monists (including contingent identity theorists such as David Lewis) appear to agree that a pure *de dicto* theory of persistence conditions is inadequate. I then consider (§9) whether there is any compelling reason to reject the pure *de dicto* theory in favour of a *de re* theory. I conclude that although there is a defensible argument against the pure *de dicto* theory, it has two interesting implications. First, the argument lends no support to an essentialist version of the *de re* theory. Secondly, it supports the rejection of the pure *de dicto* theory only by a theorist who is a pluralist about material coincidence. Hence it provides no justification for the rejection of the pure *de dicto* theory on the part of the contingent identity theorist.

1. Introduction

My topic is the modal significance of sortal concepts for questions of persistence through time. Sortal concepts provide identity conditions (or criteria of identity) for the things to

which they apply.¹ For things that persist through time, including people, cats, trees, and tables, these identity conditions include ‘persistence conditions’: conditions that specify, for example, the kinds of change that they can and cannot undergo without ceasing to exist. Many traditional philosophical puzzles about identity concern persistence conditions. For example, do the persistence conditions for persons permit them to survive total and permanent amnesia, or a transfer from one body to another? Do the persistence conditions for ships favour the repaired ship, the reconstituted ship, or neither, in the Ship of Theseus puzzle? And so on.

The notion of persistence conditions is evidently a modal notion. What exactly its modal implications are, however, is debatable.

One view is that when we say that a thing can or cannot survive certain changes in virtue of its persistence conditions, we are saying something about how it is essentially, because things have their persistence conditions essentially. This view – whose most prominent advocate is David Wiggins – goes naturally with a theory that has been called ‘sortal essentialism’.² This is the view that some sortal concepts represent essential properties of the things to which they apply: that some sortals are ‘essential sortals’.³ However, a commitment to the claim that persistence conditions are essential to

¹ I shall not try to define the notion of a sortal concept, although I shall assume that the principal distinguishing feature of sortal concepts is their role in individuation. Modern applications of the notion appear to have, as their starting point, Strawson’s distinction between ‘sortal universals’ and ‘characterizing universals’ (1959, esp. p. 168). The most detailed discussions of the notion are probably those given by Wiggins (1967, 1980, 2001). For a general survey, see Grandy 2008.

² For Wiggins’s defence of the view that a thing’s persistence conditions are essential to it, see his 1980, Ch. 4, and 2001, Ch. 4. (Wiggins himself does not use the term ‘sortal essentialism’, however.) I say that this theory ‘goes naturally with’ sortal essentialism, rather than that it implies it, because one could, in principle, deny Wiggins’s thesis that any two sortals that supply the same persistence conditions are restrictions of some further *sortal* concept. See Ayers 1974, and Mackie 2006, Ch. 8, §7. In the rest of this paper I usually ignore this complication.

³ I use ‘sortal’ as an abbreviation for ‘sortal concept’. I shall take it that to any sortal concept there corresponds a sortal property, and that where *F* is an essential sortal, *being F* is an essential property of the things that are *F*.

their possessors is not the only conception of the modal significance of persistence conditions, and it is part of the purpose of this paper to explore the alternatives. Even for those who are convinced of the truth of sortal essentialism, this investigation should be of interest. From their perspective, it must still be relevant to consider the consequences of adopting a non-essentialist theory of the modal significance of the persistence conditions that sortal concepts provide.⁴

2. Substance sortals, necessarily permanent properties, and persistence conditions

If we ask about the modal significance of sortal concepts, our focus must be on what are called ‘substance sortals’: sortals that must apply to an object throughout its existence if they apply to it at all. This category may include, perhaps, the sortals *human being* and *cat*, for example, as opposed to the sortals *boy* and *kitten*.⁵

The notion of a substance sortal is a modal notion. A substance sortal *must* apply to an object throughout its existence if it applies to the object at all, in the following sense: if F is a substance sortal property, then there is no possible world in which there is anything that is an F at some time in its existence in that world that is not an F at all times in its existence *in that world*. If F is a substance sortal property, nothing can *change over time* from being an F to not being an F, or vice versa (without going out of

⁴ Sortal essentialism, together with the associated thesis that things have their persistence conditions essentially, is subjected to a sceptical attack in Mackie 1994 and 2006. However, neither of these works discusses the issues that are the subject of this paper.

⁵ If the provision of criteria of identity is the mark of a sortal, then *boy* and *kitten* may count as sortals, although they obviously fail the test for being substance sortals. But it is also plausible to say (as does David Wiggins (1980, 2001)) that these and other so-called ‘phased sortals’ are *restrictions* of substance sortals: for example, that to be a kitten is to be an immature cat, where *cat* is a substance sortal.

existence). Properties that satisfy this condition have been called ‘necessarily permanent’ properties (Parsons 2005: 9).

There are three things that I want to emphasize about this.

(1) First, the fact that a substance sortal property is necessarily permanent does not entail that it is an essential property, in the standard, modern sense of the term, according to which to say that *being F* is an essential property of *x* is to imply that *x could not have existed* without being *F*. For example, the claim that *human being* is a substance sortal that applies to Aristotle does not, by itself, imply that Aristotle could not have existed without being human. All that it implies is that if Aristotle *had* existed without being human, he could have done so only by being non-human throughout his existence.

Moreover, this point (that there is a logical gap between being a substance sortal property and being an essential property) is not particularly contentious, and is accepted by several advocates of sortal essentialism (including Wiggins).⁶

(2) Secondly (and this is connected with the first point), we can capture the notion of a necessarily permanent property in principles that involve only modality *de dicto*, rather than modality *de re*. For to say that being (an) *F* is a necessarily permanent property is merely to say that it satisfies the principle (NP):

⁶ See, for example, Wiggins 1980: 215–16, longer note 4.24; Brody 1980: 116–23: both theorists are sortal essentialists. Others who have noted the logical gap include Kripke (1980, note 57), Kirwan (1970: 50), and Parsons (2005: 9). See also Mackie 2006 and 1994. The gap has to do with the distinction between ‘*x* could not have *become* non-*F*’ and ‘*x* could not have *been* non-*F*’. In addition to recognizing the logical gap, Wiggins presents a version of sortal essentialism that implies that there may be substance sortals that are not essential sortals because they are not what he calls ‘ultimate sortals’. See Wiggins 1980: 64–5, and, for discussion, Mackie 2006: 133ff., and Mackie 1994: 323.

(NP) Necessarily (for all x , if x is (an) F at any time in its existence, then x is (an) F at all times in its existence).

By standard criteria, (NP) counts as a *de dicto* modal principle, not a *de re* one. (NP) is silent on the question whether a thing that is (an) F in one possible world is also (an) F in other possible worlds.

(3) The third point is that the modal significance of substance sortal properties is not exhausted by their being necessarily permanent properties. Something may satisfy the criteria for being a necessarily permanent property, and yet fail thereby to provide persistence conditions in the way that substance sortal properties do.

Consider the property of *being a permanent bachelor* (defined as *being a male human being who in fact never marries*), and the property of *originating in Finland*. If these are genuine properties, evidently they are ‘necessarily permanent’. But neither of these properties provides, *in virtue of its being necessarily permanent*, persistence conditions for the things to which it applies. The property of originating in Finland, for example, tells you almost nothing about the persistence conditions of a thing that has it. And in so far as to be told that something is a permanent bachelor is to be informed about its persistence conditions (that they are those of a human being), the *permanent-bachelor* property indicates the relevant persistence conditions in exactly the same, purely derivative, way as does the simple property of *being a bachelor*, a property that does not have the characteristic of necessary permanence.

Why is it that these necessarily permanent properties – *being a permanent bachelor* and *originating in Finland* – fail to provide persistence conditions in the way that substance sortals do? It seems clear that part of the answer is that they fail to tell us (at least non-derivatively) about the changes that will bring to an end the existence of a

thing that is a permanent bachelor or a thing that originates in Finland – what changes will result in that thing’s *ceasing to exist*.⁷ The moral appears to be that, in providing persistence conditions, substance sortals provide, *inter alia*, what we may call ‘passing-away conditions’, specifying changes that the things to which they apply *cannot* survive, not in the trivial (or Pickwickian) sense in which permanent bachelors ‘cannot survive’ marriage, but, rather, conditions that *bring to an end* the things’ existence.

3. The de dicto modal significance of passing-away conditions and preservation conditions

Let us suppose, then, that, in addition to being necessarily permanent, substance sortals provide passing-away conditions. On the face of it, it seems that this extra characteristic can also be accommodated without introducing any *de re* modal principles.

Suppose, for example, that *statue* is a substance sortal.⁸ Then we have the principle (S)(1), which says that *being a statue* is a necessarily permanent property:

(S)(1) Necessarily (for all *x*, if *x* is a statue at any time in its existence, then *x* is a statue at all times in its existence).

It is plausible to say that the concept *statue* also supplies ‘passing-away conditions’ that include the principle (S)(2):

⁷ Although it is true that, in a sense, permanent bachelors cannot survive marriage (you will find no possible world in which there are permanent bachelors who marry and exist thereafter), this fact implies nothing about what it takes for a permanent bachelor to cease to exist. No permanent bachelor goes out of existence when a man marries. Rather, when a man marries, that just shows that he never was a permanent bachelor.

⁸ This may not be universally accepted. However, I need an example for my discussion. I think that the main arguments of this paper can be detached from my use of this particular example.

(S)(2) Necessarily (for all x , if x is a statue, then, if the matter that constitutes x at t is radically reshaped at t , x then ceases to exist).⁹

(S)(2) reflects the idea that a statue cannot survive radical reshaping: that a statue of a lion, for example, would be destroyed if it were compressed into an amorphous lump, or reshaped in the form of an elephant.

(S)(2) is a modal principle about statues, one that, I suggest, distinguishes the property of *being a statue* from necessarily permanent properties like *being a permanent bachelor* or *originating in Finland*.¹⁰ However, like (S)(1), (S)(2) is still a *de dicto* modal principle. Like (S)(1), (S)(2) is silent on the question whether a thing that is a statue in one possible world is a statue in other possible worlds. Hence (S)(2) appears to have no implications for the modal properties of any thing that is a statue.¹¹ For the notion of a modal *property* involves modality *de re*, and not merely modality *de dicto*.

⁹ There is, perhaps, a problem about when, exactly, a statue whose matter is radically reshaped at t ceases to exist. Does it go out of existence precisely *at* t , or only immediately *after* t ? Both suggestions seem problematic. I shall simply assume that there is a solution to this problem.

¹⁰ For example, although we have:

(B)(1) Necessarily (for all x , if x is a permanent bachelor at any time in its existence, then x is a permanent bachelor at all times in its existence),

which says, in effect (and truly), that the property of being a permanent bachelor is necessarily permanent, we do *not* have:

(B)(2) Necessarily (for all x , if x is a permanent bachelor, then, if the man who ‘constitutes’ x at t marries at t , x then ceases to exist).

Or, at least, if (B)(2) is true, it is true only vacuously, since there is no possible world in which a man satisfies the condition of ‘constituting’ a permanent bachelor (in that world) and also marries (in that world). By contrast, there *are* possible worlds in which the matter that constitutes something that is (in those worlds) a statue is radically reshaped, so (S)(2) is not vacuously true. (S)(2) tells us that, in such worlds, the statue ceases to exist when the reshaping occurs, and hence tells us something about the ‘passing-away conditions’ for statues.

¹¹ Except in the following completely uninteresting sense. For those who accept quantification into modal contexts, the *de dicto* principle (S)(1) has the *de re* modal implication that *everything*

Having recognized passing-away conditions, we can also recognize ‘preservation conditions’ associated with substance sortals. For example, we may plausibly claim that the following principle (S)(3) is a preservation condition associated with the sortal *statue* – a principle that says, in effect, that it is part of the persistence conditions for statues that they survive ‘patching’:

(S)(3) Necessarily (for all x , if x is a statue, then, if a relatively small portion of the matter that constitutes x at t is removed and immediately replaced by exactly similar matter, and no other change is made to x , x survives).

Like (S)(1) and (S)(2), (S)(3) is a *de dicto* modal principle, which has, by itself, no significant *de re* modal implications.¹² Like (S)(1) and (S)(2), (S)(3) is silent on the question whether a thing that is a statue in one possible world is a statue in other possible worlds.

I take it that it is relatively uncontroversial that the persistence conditions associated with a substance sortal include *de dicto* passing-away conditions such as (S)(2), and *de dicto* preservation conditions such as (S)(3), in addition to *de dicto* ‘necessary permanence’ conditions such as (S)(1). However, these results raise a potentially more controversial issue: whether there is any need at all to appeal to *de re*

(including anything that is a statue) has the following property: in any possible world in which it is a statue, it is a statue throughout its existence. The *de dicto* principle (S)(2) has a similar *de re* modal implication. I shall ignore, as irrelevant, this (trivial) sense in which such *de dicto* principles may be said to have *de re* (and, indeed, essentialist) modal implications. The extra *de re* commitments are trivial in the sense that they involve ‘essentialist’ commitments that are no more substantial than a commitment to the view that everything has the essential property of *being coloured-if-purple*, or to the view that everything has the essential property of *being not a four-sided triangle*, *de re* commitments that are merely parasitic on uncontroversial *de dicto* principles. See also §9.1 below.

¹² For the reason for the qualification ‘significant’, see the previous note.

modality, in addition to *de dicto* modality, in order to capture the modal significance of the persistence conditions associated with substance sortals. To this issue I now turn.

4. Beyond the *de dicto*?

If it were the case that no such additional appeal to the *de re* is needed, this would be a remarkable result. For it is standardly assumed that the fact that a thing has certain persistence conditions does have significant *de re* modal implications. Take the puzzle, made prominent by Allan Gibbard (1975), concerning whether a statue and a piece of clay that coincide throughout their existence are identical. In discussions of this puzzle, it is typically taken for granted that the statue and the piece of clay, although they actually coincide throughout their existence, at least appear to differ in their persistence conditions, and that, *as a result*, they appear to differ in their modal properties; hence that there is at least a *prima facie* objection, based on Leibniz's Law, to the identification of the statue with the piece of clay. To take another example, when David Lewis (1971) argues that he may be identical with his body, he takes himself to be required to overcome the objection that he (that is, the person who is David Lewis) and his body cannot be identical, even if they coincide throughout their existence, because they differ in their modal properties. Why? Because, apparently, a person can switch bodies although a body cannot: an apparent difference in modal properties that seems to depend on a difference in the persistence conditions associated with the concepts *person* and *body*.

Now, it is well known that some theorists (including Gibbard and Lewis) hold that, in coincidence cases such as these, the *apparent* modal difference does not correspond to a genuine difference in the properties of the 'coincident' entities. But it is

remarkable that even those who deny that there is a genuine difference in the modal properties of the entities in such cases typically accept that there is a genuine difference in the truth values of certain *de re* modal *statements*. For example, such theorists are likely to accept that, in a case where a statue and a piece of clay actually coincide throughout their existence (a ‘permanent coincidence’ case), the *de re* statement

(1M) The statue *could* have been subjected to a radical reshaping of its matter without being destroyed

is false, although the *de re* statement

(2M) The piece of clay *could* have been subjected to a radical reshaping of its matter without being destroyed

is true, even if they go on to claim that (2M) does not attribute to the piece of clay the same property that (1M) attributes to the statue – and even if they use this to defend the thesis that, in a permanent coincidence case, the statue and the piece of clay are identical.¹³

Thus the participants in the debate about whether permanently coincident entities are identical, in spite of their disagreements, seem to share a common assumption: that the persistence conditions associated with sortals such as *statue* and *piece of clay* have significant modal implications that are not merely *de dicto*, but also *de re* – since, at the

¹³ e.g., Gibbard (1975), Lewis (1971; 1986, Ch. 4), Noonan (1991, 1993). All these theorists find it intolerable to suppose that a statue and a piece of clay could completely coincide throughout their existence, sharing all their matter and microphysical parts, and yet fail to be identical. However, they hold that it is possible for a numerically distinct statue and piece of clay to coincide merely temporarily. Hence they commit themselves to the view that the identity between a statue and a piece of clay that coincide permanently is, in a sense, ‘contingent identity’.

very least, they have a bearing on the truth values of certain *de re* modal statements, such as (1M) and (2M).¹⁴

5. Persistence conditions and essential properties

If the *de re* statement (1M) is false, then it seems that the *de re* statement (3M) is true:

(3M) The statue *could not* have been subjected to a radical reshaping of its matter without being destroyed.

But what exactly does (3M) add to the *de dicto* claim

(S)(2) Necessarily (for all x , if x is a statue, then, if the matter that constitutes x at t is radically reshaped at t , x then ceases to exist),

which expresses one of the passing-away conditions for statues (§3)?

A natural interpretation of (3M) is that it implies:

(3M*) The statue is such that, in all possible worlds in which it is subjected to a radical reshaping of its matter, it is destroyed.

Given that there surely are possible worlds in which the statue (call it ‘Statue’) is subjected to a radical reshaping, if (3M*) is true, it is not merely vacuously true. As a consequence, (3M*) appears to require, for its truth, the further *de re* claim that Statue is

¹⁴ Of course, I am here assuming that both *statue* and *piece of clay* are genuine substance sortals, associated with persistence conditions for the things to which they apply. Discussion of this assumption is beyond the scope of this paper.

essentially a statue – or, at least, that it is essentially ‘statue-like’, in the following sense: *in all possible worlds in which it exists*, it has persistence conditions that include the relevant passing-away condition for statues (i.e., that represented by the principle (S)(2)). This would mean, for example, that Statue could not have been a piece of clay instead of a statue, since it would not then have had the relevant passing-away condition for statues.¹⁵

6. Persistence conditions, essentialism, and Abelardian counterpart theory

One might wonder what becomes of the argument presented in the previous section if (3M) is given an interpretation in terms of an ‘inconstant’ or (to use the terminology introduced by Harold Noonan (1991, 1993)) ‘Abelardian’ version of counterpart theory, such as the one advocated by David Lewis (1971; 1986, Ch. 4).¹⁶ Is there an ‘essentialist’ interpretation of (3M), corresponding to (3M*), that it would be appropriate

¹⁵ I admit that there is a gap in the argument for the conclusion that (3M*) implies that statues are essentially statues (or at least essentially ‘statue-like’). Suppose that there are possible worlds in which Statue is *not* statue-like, but in none of these worlds is Statue subjected to a radical reshaping of its matter. Then these worlds do not constitute counterexamples to (3M*), although they are counterexamples to the claim that Statue is essentially statue-like. We might even suppose that in some such worlds Statue is an amorphous piece of clay rather than a statue, although obviously other ways in which Statue could have failed to be statue-like might be suggested. However, it seems implausible to suppose that, if there are worlds in which Statue is *not* statue-like, they are restricted to worlds in which its matter is not radically reshaped, since the restriction would apparently be completely arbitrary. So, while recognizing this limitation to the argument, I think it can be ignored.

¹⁶ According to Noonan’s terminology, an Abelardian predicate is a predicate that can stand for different properties depending on the subject term to which it is attached (1991, 1993). Lewis’s (1971) version of counterpart theory evidently involves a treatment of modal predicates that is Abelardian in Noonan’s sense, since it implies that the modal predicate ‘could have been subjected to a radical reshaping of its matter without being destroyed’ can stand for a different property when attached to the expression ‘the statue’ from the property that it stands for when attached to the expression ‘the piece of clay’, and thus that a difference in truth value between (1M) and (2M) does not entail that the statue and the piece of clay in a coincidence case are numerically distinct. For an ‘Abelardian’ treatment of modal predicates that does not make use of counterpart theory, see Gibbard 1975. For simplicity, I confine my discussion to the counterpart-theoretic version.

for the Abelardian theorist to adopt, and which yields the conclusion that Statue is essentially a statue (or at least essentially statue-like)? I believe that there is. Suppose that (3M*) is interpreted, in accordance with Lewis's 'inconstant' or 'Abelardian' (as I shall from now on call it) version of counterpart theory, as:

(3M*_{CP}) The statue is such that none of its *statue*-counterparts (in any possible world) is subjected to a radical reshaping of its matter without being destroyed.

(3M*_{CP}) is compatible with its being the case that, in addition to its statue-counterparts (its counterparts under the statue counterpart relation), the statue (Statue) has counterparts under some other counterpart relation (perhaps the persisting-thing-composed-of-clay counterpart relation) that are subjected to a radical reshaping of their matter *without* being destroyed – because they are pieces of clay and not statues, for example. Nevertheless, that has no tendency to undermine the claim that the truth of (3M*_{CP}) requires that all of Statue's *statue-counterparts* are statues (or, at least, are sufficiently like statues to have the relevant persistence conditions for statues¹⁷). For suppose, for the sake of a *reductio*, that Statue's statue-counterparts include things that are pieces of clay and not statues, and hence have the persistence conditions for pieces of clay and not those for statues. Consider a possible world *w* such that (a) in *w*, a statue-counterpart of Statue is subjected to a radical reshaping of its matter in which all that matter is preserved in one coherent mass, but (b) this statue-counterpart of Statue in *w* is

¹⁷ I do not see how something could be sufficiently like a statue in this respect, and yet fail to be a statue. However, in some other cases, the idea that something that is an *F*, where *F* is a sortal, might have *F*-counterparts that are not themselves *F*s, but are 'relevantly similar' to *F*s (by having the persistence conditions of *F*s) has some plausibility. As David Lewis (1971) suggests, perhaps the personal counterparts of a person might include things such as robots, which are not persons but 'very like' persons. The sortal *piece of clay* (assuming that this is a sortal) may provide another example, as indicated in the text below, since the piece-of-clay counterparts of a piece of clay might include some things that are (e.g.) pieces of wax rather than pieces of clay, but have the same persistence conditions as pieces of clay.

a piece of clay and not a statue. Evidently, if there is such a possible world, it is one in which a statue-counterpart of Statue survives the radical reshaping of its matter, thus contradicting $(3M^*_{CP})$.

The argument so far given is an argument for the conclusion that (if we ignore the possibility that a statue-counterpart of Statue might be relevantly statue-like without being a statue¹⁸), the Abelardian version of $(3M^*)$ – that is, $(3M^*_{CP})$ – implies that all the statue-counterparts of Statue are statues.¹⁹ But should we take this to imply a commitment to the conclusion that Statue is *essentially* a statue, given that (according to the Abelardian theory) Statue may also have counterparts (under some different counterpart relation) that are not statues? I think it is reasonable to do so. For a plausible translation into the Abelardian version of counterpart theory of:

(5M) The statue (Statue) is essentially a statue

is

$(5M_{CP})$ The statue (Statue) is such that all of its *statue*-counterparts are statues.

What this version of counterpart theory implies, of course, is that (5M) is compatible with:

(6M) The piece of clay (Piece) is not essentially a statue,

¹⁸ See the previous note.

¹⁹ This argument is, of course, subject to the qualification mentioned in note 15 above, applied to the Abelardian counterpart-theoretic account of modal predicates.

interpreted as:

(6M_{CP}) The piece of clay (Piece) has *piece-of-clay*-counterparts that are not statues,

even if Statue is identical with Piece. But all that this shows is that, on an Abelardian version of counterpart theory, the context ‘*x* is essentially (an) *F*’, like other *de re* modal contexts, is not referentially transparent with respect to its subject place (see Lewis 1971). And I see no reason why the Abelardian theorist should treat ‘*x* is essentially (an) *F*’ as unlike other *de re* modal contexts in being referentially transparent – as requiring that *all* of *x*’s counterparts, under *every* counterpart relation according to which *x* has counterparts, are *F*(s).²⁰

7. The essentialist de re theory and the pure de dicto theory

I have argued that to hold that the persistence conditions for statues support *de re* modal statements like (3M), in addition to *de dicto* principles such as (S)(2), is naturally interpreted as involving an essentialist commitment. Similarly, if one holds that the persistence conditions for pieces of clay support a *de re* modal statement like (4M):

²⁰ Admittedly, David Lewis has said that the introduction of what I call the ‘Abelardian’ version of counterpart theory means that we should recognize a distinction between the ‘real essence’ of a thing, in the sense of the properties common to *all* its counterparts, and the ‘intermediate essence’ of a thing under a certain description ‘*F*’, which consists of the properties common to *all its F-counterparts* (Lewis 1971, p. 54 in the version reprinted in Lewis 1983). However, if we ask which of these two notions of essence it is natural for the Abelardian counterpart theorist to employ when translating essentialist statements such as (5M) and (6M), I think that the latter is at least as natural as the former.

(4M) The piece of clay *could not* have been subjected to a radical reshaping of its matter and thereby been destroyed, if the reshaping is one that preserves all its matter in one coherent mass,

this is naturally interpreted as involving an essentialist commitment. A natural interpretation of (4M) is:

(4M*) The piece of clay is such that, in all possible worlds in which it is subjected to a radical reshaping in which all its matter is preserved in one coherent mass, it survives.

And (4M*) appears to require, for its truth, that the piece of clay is essentially a piece of clay – or, at least, that it has essentially the persistence conditions for pieces of clay – which might, perhaps, be the same as the persistence conditions for pieces of matter of kinds other than clay (pieces of plasticene, wax, bronze, etc.).²¹ The relevant persistence conditions might include the following *de dicto* ‘preservation condition’:

(P)(2) Necessarily (for all x , if x is a piece of clay, then, if the matter that constitutes x at t is radically reshaped at t but preserved in one coherent mass, x survives).

Taking stock, we can now recognize two competing theories of the modal implications of the persistence conditions that are associated with substance sortals.²²

²¹ Strictly speaking, there is a gap in this argument for the conclusion that (4M*) has this essentialist implication, for the same reasons, *mutatis mutandis*, as I noted, in connection with (3M*), in note 15 above. That is, (4M*) could be true, compatibly with there being possible worlds in which the piece of clay lacks the persistence conditions of a piece of clay, as long as any such possible world is also one in which it is *not* subjected to a radical reshaping of its matter in which all its matter is preserved in one coherent mass. However, as in the case of the implications of (3M*) discussed above, such a restriction would appear to be entirely arbitrary, and so I think this complication can safely be ignored.

²² As I have already noted, I assume for the purposes of this discussion that both *statue* and *piece of clay* are substance sortals.

According to what I shall call ‘the essentialist *de re* theory’, although substance sortals do provide *de dicto* persistence conditions (such as (S)(1), (S)(2), (S)(3), and (P)(2)), they have, in addition to this, the feature that a thing that falls under a substance sortal has, *essentially*, the persistence conditions associated with that substance sortal. As a consequence (according to this theory) substance sortals have *de re* implications for the things that fall under them, and thus the persistence conditions that are associated with a substance sortal also have a *de re* modal aspect.²³ The characterization of this extra *de re* modal aspect is complicated by the existence of the Abelardian version of the theory. However, according to the *non*-Abelardian version of the essentialist *de re* theory (according to which *de re* modal predication is referentially transparent), the essentialist *de re* modal aspect of the persistence conditions associated with substance sortals can be captured in *de re* general principles such as:

(S)(2-Edr) For all *x*, if *x* is a statue, then, necessarily (if the matter that constitutes *x* at *t* is radically reshaped at *t*, *x* then ceases to exist).

(S)(3-Edr) For all *x*, if *x* is a statue, then, necessarily (if a relatively small portion of the matter that constitutes *x* at *t* is removed and immediately replaced by exactly similar matter, and no other change is made to *x*, *x* survives).

(P)(2-Edr) For all *x*, if *x* is a piece of clay, then necessarily (if the matter that constitutes *x* at *t* is radically reshaped at *t* but preserved in one coherent mass, *x* survives).

²³ The resulting *de re* essentialist theory will not necessarily say that all substance sortals are essential sortals. It may, for example, confine itself to the claim that what Wiggins calls ‘ultimate sortals’ are essential sortals, where an ultimate sortal is the most general sortal corresponding to a single principle of individuation (or set of persistence conditions). (cf. Wiggins 1980: 65, note 8.) See also note 2 above.

On the other hand, there is what I shall call ‘the pure *de dicto* theory’, which holds that the persistence conditions associated with a substance sortal are exhausted by *de dicto* principles such as (S)(1), (S)(2), (S)(3), (P)(2), and the like: principles that, by themselves, have no significant *de re* implications.

8. *Intermediate de re theories*

8.1 *The potentiality theory*

It is evident, however, that the essentialist *de re* theory and the pure *de dicto* theory do not exhaust the options. One might be a *de re* theorist (a theorist who holds that substance sortals have significant *de re* modal implications) without thinking that these *de re* implications involve a commitment to essentialism, even essentialism of the ‘Abelardian’ variety. There are at least two types of ‘intermediate *de re* theory’. The first, which I call (for want of a better term) ‘the potentiality theory’, holds that (to continue with the case of the statue and the clay) although the *de re*

(3M) The statue *could not* have been subjected to a radical reshaping of its matter without being destroyed,

and

(4M) The piece of clay *could not* have been subjected to a radical reshaping of its matter and been destroyed, if the reshaping is one that preserves all its matter in one coherent mass

are true, the ‘could not’ here should be interpreted as making a *de re* modal claim that is weaker than the claims involved in the essentialist interpretations (3M*) and (4M*)

considered in the previous sections.²⁴ *De re* statements of the form ‘*x* could not have φ -d’ are notoriously capable of a variety of interpretations, many of which do not entail that there is no possible world in which *x* φ -s. (Consider, for example, the claims that I could not have completed last Saturday’s marathon successfully, or that I could not have got to Paris today in time for the conference.) So, for example, we might take (3M) as indicating a potentially weaker modal claim than the essentialist (3M*): perhaps that the statue lacks the *capacity* or *potentiality* to be radically reshaped without being destroyed, or (if this is different) that there is some restricted class of possible worlds such that, in none of the worlds in this restricted class is the statue radically reshaped without being destroyed. If some such non-essentialist interpretation of (3M) is acceptable, then, clearly, similar non-essentialist interpretations of (4M) are acceptable also. And if non-essentialist interpretations of (3M) and (4M) are acceptable, then the choice is not between the ‘pure *de dicto*’ theory and the essentialist *de re* theory: there is at least one intermediate *de re* view, namely the ‘potentiality theory’.

8.2 *The counterfactual de re theory*

Even more obviously, however, there is an intermediate *de re* theory that rejects (3M) and (4M), but still endorses counterfactuals such as:

(7M) If the statue had been subjected to a radical reshaping of its matter (including one in which all its matter was preserved in one coherent mass), then it *would* have been destroyed,

²⁴ Or their ‘Abelardian’ variants: for example the Abelardian version of (3M*), (3M*_{CP}), according to which there is *no* possible world in which a *statue-counterpart* of the statue is subjected to a radical reshaping of its matter without being destroyed. See §6 above. For simplicity, I ignore the Abelardian variants in the current section.

and

(8M) If the piece of clay had been subjected to a radical reshaping of its matter in which all its matter was preserved in one coherent mass, then it *would* have survived.

The truth of (7M) may require that in the closest possible worlds in which the statue is subjected to a radical reshaping of its matter in which that matter is preserved in one coherent mass, it still has the persistence conditions of a statue. And the truth of (8M) may require that in the closest possible worlds in which the piece of clay is subjected to such a radical reshaping of its matter, the piece of clay still has the persistence conditions of a piece of clay. However, these implications obviously fall short of the implications of the essentialist interpretations of statements such as (3M) and (4M). (7M) and (8M) imply nothing about the properties (including the persistence conditions) that the statue and the piece of clay have in *all* possible worlds in which they exist (or even all possible worlds in which they are subjected to a certain kind of radical reshaping of their matter), and hence nothing about their essential properties. For obvious reasons, I shall call the intermediate *de re* theory that rejects statements like (3M) and (4M), but accepts counterfactuals like (7M) and (8M), ‘the counterfactual *de re* theory’.

9. What is wrong with the pure *de dicto* theory?

To recapitulate: according to the pure *de dicto* theory, the modal aspect of the persistence conditions associated with a substance sortal can be captured entirely in a set of *de dicto* principles of which the following are examples:

(S)(1) Necessarily (for all x , if x is a statue at any time in its existence, then x is a statue at all times in its existence).

(S)(2) Necessarily (for all x , if x is a statue, then, if the matter that constitutes x at t is radically reshaped at t , x then ceases to exist).

(P)(1) Necessarily (for all x , if x is a piece of clay at any time in its existence, then x is a piece of clay at all times in its existence).

(P)(2) Necessarily (for all x , if x is a piece of clay, then, if the matter that constitutes x at t is radically reshaped at t but preserved in one coherent mass, x survives).

Evidently, these four principles alone do not tell us everything about the persistence conditions for statues and pieces of clay.²⁵ But is there any compelling reason to think that, in order to give an adequate account of the persistence conditions for statues and pieces of clay, we must supplement these principles with further principles that are *de re*, rather than *de dicto*? In other words, is there any compelling reason to reject the pure *de dicto* theory of persistence conditions in favour of some version of a *de re* theory – either ‘essentialist’ or ‘intermediate’?

9.1 The purity of the pure de dicto theory

A preliminary issue is that one might think it impossible for the ‘pure’ *de dicto* theory to remain completely unsullied in its purity, for the following reason. The combination of the *de dicto* principles (S)(1) and (S)(2), for example, appears to imply, concerning any statue that actually exists at t :

²⁵ For example, these four principles alone tell us nothing positive about the passing-away conditions for pieces of clay, nothing about the preservation conditions for statues, and nothing about the ways in which a statue may go out of existence aside from radical reshaping.

(9M) The statue has, at t , no possible future in which it survives radical reshaping.

(9M) does not imply either of the *de re* statements (3M) or (7M). Nevertheless, (9M) does appear to involve *de re* modal predication, and it appears to have some implications for the properties that the statue has in certain other possible worlds: namely, worlds that share their history, at time t , with the actual world.

Various things could be said in response to this issue. One might, for example, hold that, if the *de re* (9M) really is a consequence of the *de dicto* principles, this phenomenon should be assimilated to the fact that *any de dicto* modal statement may be regarded as having some, albeit trivial, *de re* modal implications: as, for example, the fact that it is a *de dicto* necessary truth that everything that is red is coloured entails that everything is essentially coloured-if-red – a genuine but trivial example of the *de re*.²⁶

Rather than explore this issue, however, I shall simply bracket this consideration. Let ‘the pure *de dicto* theory’ henceforth denote a theory that recognizes only *de dicto* modal principles concerning persistence, plus any *de re* modal statements (perhaps including (9M)) that are consequences of the *de dicto* principles. There is still an important contrast between the pure *de dicto* theory, qualified in this way, and the intermediate and essentialist *de re* theories, since they recognize further *de re* principles that are *not* mere consequences of the *de dicto* principles. Hence there remains an important question whether there is any compelling reason to think that the pure *de dicto* theory fails to do justice to the modal significance of persistence conditions.

²⁶ cf. note 11 above. Of course, this point is subject to the proviso that the entailment will be rejected by one, such as Quine (1953), who accepts the *de dicto* but refuses to acknowledge the coherence of *de re* modality.

9.2 The explanation argument

It might be thought that the pure *de dicto* theory is inadequate for the following reason. Consider a statue, Statue, and a piece of clay, Piece, which coincide from the very beginning of their existence until a later time at which their matter is radically reshaped but remains in one coherent mass. The principles (S)(2) and (P)(2), together with (S)(1) and (P)(1), entail that, when the radical reshaping occurs, Statue goes out of existence, whereas Piece survives. However, if we ask *why*, in this scenario, Statue goes out of existence while Piece survives, it may seem that the appeal to these *de dicto* principles is insufficient.²⁷ Consider, once again, the necessarily permanent property *being a permanent bachelor* (§2 above). Although we have agreed that, unlike a substance sortal property, this property does not generate any passing away (or preservation) conditions, it evidently does generate the following *de dicto* principle:

(B)(3) Necessarily (for all x , if x is a permanent bachelor, then there is no time t such that x marries at t).

Yet it would be absurd to appeal to (B)(3) to explain why a particular man – Jim, say – who, as it turns out on his deathbed, was a permanent bachelor, did not marry when the opportunity presented itself. And it may seem that the obvious reason why this is absurd – why the ‘logical obstacle’ to matrimony involved in Jim’s being a permanent bachelor is irrelevant to the explanation of his failure to marry – is that, although Jim is in fact a permanent bachelor, he is only *contingently* a permanent bachelor. If he had married, he would not have been a permanent bachelor, but since he is only contingently a permanent bachelor, the fact that he was one, together with the truth of (B)(3), has no tendency to

²⁷ cf. Mackie 2007, discussing Stone 2005.

show that he could not have married; hence provides no explanation of why he did not marry when the opportunity presented itself. However, if this is the diagnosis of the absurdity, it may seem that, by parallel reasoning, it is also inappropriate to appeal to the *de dicto* principles (S)(2) and (S)(1) to explain why Statue goes out of existence when it is radically reshaped, unless we supplement the *de dicto* principles with the further *de re* modal claim that Statue is not merely contingently a statue, but *essentially* a statue, or that it *could not* have existed without being a statue.²⁸ For if Statue is merely contingently a statue, the fact that it is a statue, together with the truth of (S)(2) and (S)(1), has no tendency to show that Statue could not have been radically reshaped without being destroyed. But if it has no tendency to show that, then it may seem that (by analogy with the case of the flawed attempt to explain Jim's failure to marry), the fact that Statue is a statue, together with the truth of (S)(2) and (S)(1), cannot explain why Statue is destroyed when it is radically reshaped.

However, as Harold Noonan has shown, this superficially plausible 'explanation argument' (for the inadequacy of the *de dicto* explanation in the case of the statue) does not work.²⁹ It ignores the fact that there is a crucial disanalogy between the explananda in the two cases. To attempt to appeal to the principle (B)(3) to explain why Jim does not marry when the opportunity presents itself is hopeless (and absurd) because it is an attempt to explain, by appeal to purely logical or conceptual considerations, a fact that requires a *causal* explanation, viz., that Jim does not marry. By contrast, the explanandum in the statue case – the fact that Statue goes out of existence when it is radically reshaped – is *not* something that calls for a causal explanation. Hence an

²⁸ cf. Mackie 2007: 29. The distinction between the essentialist and the 'intermediate' ('potentiality theory') readings of 'could not' discussed in §8.1 does not really matter to this argument, although it is the essentialist reading that seems most obviously relevant.

²⁹ Noonan 2008: 93; elaborated in Noonan, forthcoming. The description in the text of Noonan's counter-argument to the 'explanation argument' is, however, my own.

explanation of this explanandum in purely conceptual terms, by appeal to the *de dicto* principles (S)(2) and (S)(1), is entirely appropriate. Of course, a causal explanation is required *for why the matter of Statue is radically reshaped*. But in connection with the further question: ‘why did the radical reshaping of the matter of Statue put an end to Statue’s existence?’, the demand for a causal explanation is misguided. No *causal* explanation of the fact that the radical reshaping means the demise of Statue is either required or even appropriate. An entirely satisfactory explanation of why the radical reshaping of Statue’s matter, when it occurs, puts an end to Statue’s existence, is provided by the fact that Statue is a statue, together with the *de dicto* principles (S)(1) and (S)(2).³⁰

9.3 The vacuous satisfaction argument

There is, however, a second argument against the pure *de dicto* theory that is not so easily dismissed. I call it ‘the vacuous satisfaction argument’.

Suppose, as the pure *de dicto* theory maintains, that all that there is to a thing’s having the persistence conditions of a statue is its satisfying *de dicto* principles such as

³⁰ Noonan (2008 and forthcoming) uses this response to what I have called ‘the explanation argument’ to defend the contingent identity theory (or what he terms ‘Moderate Monism’) against the objection that it cannot give an adequate explanation, in modal terms, of why a statue goes out of existence when it is radically reshaped although the piece of clay with which it temporarily coincides does not. However, Noonan’s response does not *require* the adoption of the contingent identity theory. It can (and, if it is cogent, as I think it is, *should*) also be endorsed by a pluralist about coincidence cases (that is, by one who rejects the contingent identity theory, and believes that even a permanently coincident statue and piece of clay are distinct entities). In the presentation of his response in his (2008), Noonan characterizes it as turning on the fact that ‘any situation one describes in which there is a permanent bachelor is one in which the man in question is identifiable in some other way’, whereas no such relevant alternative identification of the statue in the coincidence case is possible (2008: 93). This is, however, a slip. Clearly Statue can be identified in a way that does not entail that it has the persistence conditions of a statue – e.g., as ‘the artefact that I bought last week’ – just as Jim can be identified in a way that does not entail that he is a permanent bachelor. The crucial point (explained in the text above, and clarified in Noonan forthcoming) concerns the difference in the status of the explananda in the two cases as regards the relevance of the demand for a causal explanation.

(S)(1), (S)(2), and the like,³¹ and that all that there is to a thing's having the persistence conditions of a piece of clay is its satisfying *de dicto* principles such as (P)(1) and (P)(2), and the like, as long as it does not do so vacuously simply by failing to satisfy the antecedent of the conditionals 'if *x* is a statue . . .' and 'if *x* is a piece of clay . . .'.³² It is clear that a single entity can, in principle, satisfy all four of the *de dicto* modal principles ((S)(1), (S)(2), (P)(1), (P)(2)) in this way *as long as it is never subjected to a radical transformation of its shape in which all its matter is preserved in one coherent mass*.

For suppose that there is a statue (Statue) that is never subjected to such a radical reshaping of its matter. Then, as well as satisfying (S)(1), Statue also satisfies (S)(2). However, there is a clear sense in which it satisfies (S)(2) vacuously. For although the antecedent of the first conditional in (S)(2) is fulfilled (since Statue is a statue), the antecedent of the *second* conditional in (S)(2) is not. But now, suppose, for the sake of argument, that Statue is not only a statue, but also a piece of clay. If so, then, according to (P)(1), Statue is a piece of clay throughout its existence. Although this may seem odd, there is nothing in (S)(1) and (P)(1), considered in themselves, to rule it out. However, the fact that (S)(2) and (P)(2) (in conjunction with (S)(1) and (P)(1)) provide *potentially conflicting* persistence conditions also poses no barrier to Statue's being a piece of clay as well as a statue.³³ For, since Statue satisfies (S)(2) vacuously, it also satisfies (P)(2)

³¹ For simplicity, I shall say that an entity 'satisfies' a *de dicto* universally quantified principle such as (S)(1) just in case the entity satisfies the predicate that results from stripping the principle of both its modal operator and its universal quantifier.

³² This restriction is needed because we do not want to say that a table or a cat, for example, has the persistence conditions of a statue just because, by not being a statue, it vacuously satisfies principles such as (S)(1) and (S)(2). Obviously, (S)(1) and (S)(2) are vacuously satisfied in this way by anything that is not a statue, and (P)(1) and (P)(2) are vacuously satisfied in this way by anything that is not a piece of clay. (On the relevant notion of 'satisfaction', see the previous note.)

³³ By saying that two sets of persistence conditions C1 and C2 are 'potentially conflicting' I mean that there are possible circumstances in which the demands of C1 and C2 are incompatible (as is

vacuously, for the very same reason. On the assumption that Statue is a piece of clay, it is a piece of clay that is never subjected to a radical reshaping of its matter. And, if so, it is a piece of clay that provides no counterexample to (P)(2).

But there is something puzzling about this result, even for someone who denies, or is agnostic about, the claim that statues are essentially statues, and pieces of clay essentially pieces of clay. The worry is that the constraints imposed by the *de dicto* persistence conditions alone make it *too easy* for something to be both a statue and a piece of clay. And the reason for this appears to be that the *de dicto* principles put no constraints at all on the ways in which things that are statues and pieces of clay *would have* behaved in certain counterfactual circumstances. For example, the satisfaction of the *de dicto* (S)(2) by a statue implies nothing about what *would have* become of it – that statue – if its matter *had* been radically reshaped. The most that we can say, on the basis of (S)(2), is that, *if it had still been a statue*, then, if its matter had been radically reshaped, it would not have survived the reshaping. But it seems counterintuitive to suppose that something's being a statue (and hence having the persistence conditions of a statue) implies nothing about how it would have behaved – what *would have* happened to it – in counterfactual circumstances. We can say the same, *mutatis mutandis*, about pieces of clay: intuitively, something's being a piece of clay (and hence having the persistence conditions of a piece of clay) has implications for what *would have* happened to that thing in counterfactual circumstances.

Consider the following analogy. Suppose that we were to attempt to define the properties of bravery and cowardice in terms of the following *de dicto* principles:

the case, for example, if in those circumstances the possession of C1 requires perishing, while the possession of C2 requires survival).

(*Brave*) Necessarily (for all persons x , x is brave if and only if, if x is confronted with danger, x stands firm);

(*Coward*) Necessarily (for all persons x , x is a coward if and only if, if x is confronted with danger, x runs away).

The description of the behaviour associated with bravery and cowardice in these definitions is, of course, absurdly simplistic. However, even if we ignore this deficiency, these definitions are obviously unsatisfactory, for the following reason. Evidently, the definitions (*Brave*) and (*Coward*) make it far too easy to be *both* brave *and* a coward: all that it takes is to have the good fortune never to be confronted with danger. But this fact clearly shows that these *de dicto* definitions are inadequate. To be brave seems to require (to put it crudely) that one have the *disposition* to stand firm in situations of danger; to be a coward seems to require that one have the *disposition* to run away in such situations.³⁴ And the possession of these dispositions is not guaranteed by the merely vacuous satisfaction of principles such as (*Brave*) and (*Coward*).³⁵

It seems intuitively plausible, then, that the sortal properties of being a statue and being a piece of clay are, in some respects, similar to the (dispositional) properties of being brave and being a coward. For they have implications for the ways that things that are in fact statues and pieces of clay *would* have behaved (what *would* have been true of them) in some non-actual circumstances. However, as the examples of bravery and cowardice show, this fact has no tendency to suggest that the sortal properties are essential properties of the things that have them. Although to say that I am a coward may

³⁴ Of course, for reasons already indicated, this is far too simplistic an account of the behavioural dispositions that are involved in being brave and being a coward. But this does not matter for my purposes.

³⁵ On what it means for an individual to ‘satisfy’ a principle such as (*Brave*) or (*Coward*), see note 31 above.

be to imply something about how I *would* have behaved in certain circumstances: for example (to continue with our simplistic account of the relevant behaviour), that I would have run away in a situation of danger, it is not to claim that in *all* possible circumstances in which I am in danger I run away. In particular, it allows for the fact that even if I am a coward, I may not be *essentially* a coward; if so, then my actually being a coward is consistent with there being some possible circumstances in which I am brave, and hence in which I stand firm in the face of danger. So the ‘vacuous satisfaction argument’, by itself, lends no support to the essentialist *de re* theory of persistence conditions rather than one of the intermediate *de re* theories (§8 above). Moreover, the theory to which the argument most obviously lends support is the ‘counterfactual’ version of the *de re* theory, rather than any stronger version.³⁶

9.4 Contingent identity, de re modality, and the vacuous satisfaction argument

The vacuous satisfaction argument provides support for the conclusion that the pure *de dicto* theory is inadequate, and that the *de dicto* persistence conditions associated with substance sortals must be supplemented with further *de re* counterfactual persistence conditions; for example:

(S)(2-Cdr) For all x , if x is a statue, then, if at any time in x ’s existence the matter that then constituted x had (then) been radically reshaped, x *would have* ceased to exist.

³⁶ This is not to deny that there may be arguments for sortal essentialism that are independent of the question whether an adequate account of the *persistence conditions* provided by sortal concepts requires that things have their persistence conditions essentially. The evaluation of such additional arguments for sortal essentialism is beyond the scope of this paper, however. cf. §1 above.

(P)(2-Cdr) For all x , if x is a piece of clay, then if at any time in x 's existence the matter that then constituted x had (then) been radically reshaped but preserved in one coherent mass, x *would have* survived.³⁷

These principles support *de re* counterfactuals, concerning a particular statue and a particular piece of clay, such as those discussed in §8.2 above:

(7M) If the statue had been subjected to a radical reshaping of its matter (including one in which all its matter was preserved in one coherent mass), then it *would have* been destroyed.

(8M) If the piece of clay had been subjected to a radical reshaping of its matter in which all its matter was preserved in one coherent mass, then it *would have* survived.

In addition, though, these general *de re* counterfactual principles also entail that *no single entity can be both a statue and a piece of clay*, even if its matter is never in fact subjected to such a radical reshaping.

But now, as the reader will have anticipated, there is a complication. The vacuous satisfaction argument begins with the observation that the *de dicto* principles can be satisfied vacuously, and the thought that this is problematic. The conclusion of the argument is that, as a remedy, we should add, to the *de dicto* principles, *de re* counterfactual principles (such as (S)(2-Cdr) and (P)(2-Cdr)) that not only support particular *de re* statements such as (7M) and (8M), but also entail that a single entity cannot satisfy two *potentially conflicting* sets of *de dicto* persistence conditions, such as

³⁷ These formulations (of general *de re* counterfactual principles) are intended to serve as (non-Abelardian) generalizations of counterfactuals such as (7M) and (8M). They may not perfectly succeed in fulfilling this aim, because of potential ambiguities in the interpretation of the temporal indicators in the general principles. However, I shall assume that these formulations will do for my purposes in this paper.

the ‘statue-set’ including (S)(2) and the ‘piece-of-clay-set’ including (P)(2).³⁸ The addition of the general *de re* principles has the effect of transforming the merely potential conflict between the sets of *de dicto* persistence conditions into an *actual* conflict of modal (counterfactual) properties. It follows from this that the vacuous satisfaction argument provides a reason for rejecting the pure *de dicto* theory only for someone who is a ‘pluralist’ about coincident entities – and holds, for example, that it is impossible for a single entity to be both a statue and a piece of clay (given that the *de dicto* persistence conditions for statues and pieces of clay are potentially in conflict).³⁹

Yet, as we know, there are theorists – the contingent identity theorists mentioned in §4 above, including Gibbard, Lewis, and Noonan – who hold that although temporary coincidence is not identity, permanent coincidence is identity. These theorists, far from *repudiating* the idea that a single entity can satisfy the *de dicto* persistence conditions for both *statue* and *piece of clay* through the accident of never having its matter radically reshaped, explicitly affirm this as part of their theory. Hence the vacuous satisfaction argument cannot provide the contingent identity theorist with a reason for rejecting the pure *de dicto* theory.

Nevertheless, as we have seen, the contingent identity theorist does typically reject the pure *de dicto* theory (§4 above). Although the contingent identity theorist

³⁸ Although the potential for conflict may appear to be generated by (S)(2) and (P)(2) alone, strictly speaking it requires the ‘necessary permanence’ principles (S)(1) and (P)(1) as well, for reasons noted in Mackie 2007. Without (S)(1), (S)(2) appears to be compatible with the following situation: *a* is a statue at *t*₁; at *t*₂ *a* ceases to be a statue, but continues to exist as something other than a statue; at a later time *t*₃ *a*’s matter is radically reshaped, but *a* survives the reshaping because at *t*₃ *a* is no longer a statue, and (S)(2) is a principle about statues.

³⁹ Suppose that one’s reason for being a pluralist is that one thinks that potentially conflicting *de dicto* persistence conditions generate conflicting (*de re*) modal properties. Such a pluralist cannot, without circularity, defend the vacuous satisfaction argument on the grounds that it is congenial to pluralism. However, this does not matter for my purposes. All that I need, for the purposes of my argument here, is that the vacuous satisfaction argument rests on an intuition that the pluralist can respect, but the contingent identity theorist cannot.

cannot accept the general principles (S)(2-Cdr) and (P)(2-Cdr) – since these principles require a (non-Abelardian) treatment of modal predication as referentially transparent – the contingent identity theorist typically accepts *de re* counterfactuals such as (7M) and (8M), while giving them an (Abelardian) interpretation that prevents them from generating a conflict of modal properties. For example, according to the Abelardian version of counterpart theory discussed in §6 above, (7M) and (8M) may be interpreted as:

(7M_{CP}) The statue is such that, in the closest possible worlds in which its *statue-counterparts* are subjected to a radical reshaping of their matter (including reshapings in which all the matter is preserved in one coherent mass), those statue-counterparts are destroyed,

and

(8M_{CP}) The piece of clay is such that, in the closest possible worlds in which its *piece-of-clay-counterparts* are subjected to a radical reshaping in which all their matter is preserved in one coherent mass, those piece-of-clay-counterparts survive.

Evidently, (7M_{CP}) and (8M_{CP}) are consistent with its being the case that a statue that is *not* in fact subjected to such a radical reshaping is identical with a piece of clay with which it coincides throughout its existence, even though, had such a radical reshaping occurred, the coincidence would have been merely temporary rather than permanent, and the statue and the piece of clay would not have been identical.⁴⁰

⁴⁰ According to the contingent identity theorist (or ‘moderate monist’, to use the terminology employed by Noonan (2008 and forthcoming)), although the modal predicate ‘would have been destroyed if it had been radically reshaped’ is Abelardian, the predicate ‘will be destroyed if radically reshaped’ is not. This reflects the contingent identity theorist’s view that it is only permanent coincidence, and not temporary coincidence, that is identity. A theory that regards

This gives rise to the following challenge. A contingent identity theorist who adopts an Abelardian theory of *de re* modality may claim that the rationale for introducing *de re* persistence conditions in addition to *de dicto* persistence conditions is that substance sortals really do have counterfactual implications that are not captured by *de dicto* principles alone. The theorist can apparently pay lip service to the idea that reliance on *de dicto* principles alone makes it ‘too easy’ for something to be (for example) both a statue and a piece of clay: according to this contingent identity theorist, there really are further *de re* persistence conditions (albeit of a ‘devious’ kind) that must be satisfied, as illustrated by (7M_{CP}) and (8M_{CP}).⁴¹ But what is unclear is what *reason* this Abelardian contingent identity theorist has for accepting the need for these additional *de re* conditions, given that the theorist must deny that it is either part of the point of, or an implication of, these extra *de re* persistence conditions that they rule out the satisfaction, by a single entity, of potentially conflicting *de dicto* persistence conditions. The contingent identity theorist therefore faces a challenge that the pluralist does not, concerning the theorist’s justification for rejecting the pure *de dicto* theory and for holding that the persistence conditions associated with sortal concepts involve an additional *de re* element.

Reflecting on the legacy of Quine’s scepticism about *de re* modality, John Divers has pressed, on behalf of the Quinean (or other) *de re* modal sceptic, the question what the point of *de re* modality is, and ‘*why* we should struggle to accommodate *de re* modalizing in our total theory’ (2007: 57). The attempt at the accommodation of the *de*

even temporary coincidence as identity (i.e., a version of ‘extreme monism’, according to the terminology of Fine 2003, followed by Noonan 2008 and forthcoming) must treat the non-modal predicate ‘will be destroyed if radically reshaped’ as Abelardian as well – as, for example, do the versions of stage theory advocated in Sider 2001 and Hawley 2001. Further discussion of extreme monism is beyond the scope of this paper, however.

⁴¹ I take the characterization ‘devious’ from one of the proponents of the contingent identity theory: Gibbard (1975, §VIII).

re that is most prominent in Divers's paper is, however, that of David Lewis, with its employment of an 'inconstant' ('Abelardian') version of counterpart theory. The discussion in my paper suggests that, at least with regard to modal questions concerning persistence, the Lewisian may be particularly *ill*-placed to answer Divers's challenge. For my arguments suggest that the Lewisian accommodation may be achieved only at the cost of sacrificing what rationale there is for regarding merely *de dicto* persistence conditions as inadequate.

9.5 Two objections

Before concluding, I consider two objections to the argument of the last section. It may be agreed that the contingent identity theorist cannot accept the vacuous satisfaction argument as a reason for supposing that persistence conditions have a *de re* aspect not captured by the pure *de dicto* theory, since the intuition behind the vacuous satisfaction argument is one that is at odds with the contingent identity theory. However, it may be objected that this fact does not have the significance that I attribute to it. Two different reasons might be proposed for this.

First, there is the possibility that my discussion has overlooked some further reason for supposing that a pure *de dicto* theory of persistence conditions is inadequate – a reason that the contingent identity theory may be as well equipped to accommodate as is the pluralist theory. In response to this, all that I can do is to ask to be shown what this further reason is.

Secondly, it might be asked: why can't the contingent identity theorists simply take it, as given, that the persistence conditions associated with sortal concepts *do* have *de re* implications (for example, counterfactual implications) that go beyond their *de dicto* implications, and regard their task as that of accommodating these *de re*

implications in their theory, rather than being required to show that a pure *de dicto* theory that *fails* to accommodate these *de re* implications is inadequate?

My response to this second objection is implicit in the argument at the end of the previous section. Contingent identity theorists have a choice. They may either provide a theory of persistence conditions that is designed to accommodate the *de re* implications, or adopt the more revisionary strategy of rejecting a *de re* theory of persistence conditions in favour of a purely *de dicto* theory. If they adopt the first strategy, they face the question whether their accommodation does justice to the intuitions that lie behind the *de re* implications. When confronted with the contingent identity theorists'

Aberlarian attempt to accommodate the apparent *de re* implications of sortal concepts, I think that many people's initial reaction is to suspect that the contingent identity theorist has merely paid lip-service to the phenomena, without doing justice to the intuitions that lie behind them: in effect, that an Aberlarian account of *de re* modality does not take *de re* modality seriously. If I am right, then this suspicion, at least in the case of the apparent *de re* modal consequences of sortal concepts and their persistence conditions, is justified.

10. Concluding remarks

This paper does not, of course, attempt to give the final verdict on the modal significance of the persistence conditions that are associated with sortal concepts. I have, however, tried to do the following things. The first is to demonstrate the extent to which the modal significance of persistence conditions can be characterized without appeal to *de re* modality, and that there is therefore a serious question why, if at all, a purely *de dicto* theory of persistence conditions should be regarded as deficient (§§2–4). The second is to make salient the fact that, even if one rejects the pure *de dicto* theory, one may hold that

persistence conditions have significant *de re* implications without supposing that things have their persistence conditions essentially (and hence without embracing sortal essentialism), most notably by adopting an account of persistence conditions that limits their significant *de re* modal implications to *counterfactual* implications (§8). The third is to argue that, although a superficially plausible argument against the pure *de dicto* theory – the ‘explanation argument’ – is unsound, there is a persuasive argument – the ‘vacuous satisfaction argument’ – that does lend support to the rejection of a pure *de dicto* theory (§§9.2–9.3). The fourth is to point out that the support that this vacuous satisfaction argument provides for a *de re* theory of persistence conditions has two striking features. One is that the vacuous satisfaction argument provides no grounds for adopting an essentialist *de re* theory of persistence conditions, as opposed to a counterfactual *de re* theory (§9.3). The other is that the grounds that the vacuous satisfaction argument provides for the rejection of the pure *de dicto* theory of persistence conditions appear to be available only to one who is a pluralist about cases of permanent coincidence (§§9.4). Thus they appear to provide no reason why a contingent identity theorist should regard the pure *de dicto* theory as inadequate. As a consequence, there is a challenge, to these theorists, concerning their justification for claiming, as they typically do, that the persistence conditions associated with sortal concepts have implications that are *de re* as well as *de dicto*.⁴²

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